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SYLLABUS 27

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A. C. TRUE, Director
In Cooperation with the Bureau of Plant Industry
W. A. TAYLOR, Chief

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ILLUSTRATED LECTURE ON THE FARM VEGETABLE GARDEN

By

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SYLLABUS 27—ILLUSTRATED LECTURE ON THE FARM VEGETABLE GARDEN.[1]

By H. C. Thompson, *Horticulturist, Bureau of Plant Industry,* and H. M. Conolly, *Assistant Horticulturist in Agricultural Education, States Relations Service.*

INTRODUCTION.

View.

A well-planned and carefully tended garden is one of the most profitable and satisfying pieces of the farm work. By properly planning the garden and giving it a little attention when required the work need not be a burden to the farmer or to the members of his household. 1

Gardening gives pleasure, not only in the work with the growing plants, but in the producing of high quality, crisp, fresh vegetables for the family table. Every housewife would appreciate a continuous supply of fresh vegetables from the garden, as it would help her to answer the question, "What shall we have to-day for dinner?" 2

The value of vegetables in the diet is seldom appreciated, and the families that do not possess a garden soon become heavy consumers of meats and store provisions. The low consumption of garden products usually is accompanied by high grocery bills and in many instances where few vegetables are used the doctor's visits are more frequent. The garden is therefore a good investment from the standpoint of health as well as financially.

[1] This syllabus has been prepared by direct cooperation between the Office of Horticultural and Pomological Investigations of the Bureau of Plant Industry, as regards subject matter, and J. M. Stedman, Farmers' Institute Specialist of the States Relations Service, as regards pedagogical form. It is designed to aid farmers' institute and other extension lecturers in presenting this subject before popular audiences. The syllabus is illustrated with 50 lantern slides. The numbers in the margins of the pages refer to the lantern slides as listed in the Appendix.

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Every home should be surrounded by features that will interest and teach the children. The work in the vegetable garden is one of the very best ways of teaching the children a love for plants and also giving them a knowledge of how to make plants grow. Many of the principles of successful farming can be instilled into the mind of the boy by his work in the garden. A garden should be established for this, if for no other reason.

LOCATION AND SOIL.

The vegetable garden should be located as near the house as is practicable. The housewife is the one who will derive the greatest pleasure from the garden, and it should be possible for her to step out and in a few minutes procure what vegetables she desires. When the garden is situated some distance from the house the effort necessary to look after the vegetables becomes a burden, the garden is soon neglected, and the products are not utilized to the fullest extent. A spot where the garden can be located permanently is to be preferred, for then the soil can be improved steadily until it reaches a high state of fertility. A gentle slope is preferable to flat land, for it usually has better drainage, and if the slope is toward the south the soil warms up quickly in the spring, permitting early planting and early maturing of crops.

A rich sandy loam is the ideal soil for the garden, because it warms up early in the spring and can be more easily worked than the heavier types of soil. Almost any kind of soil, however, can be used for gardening if it is properly handled. Heavy clay soils may be improved greatly by adding large quantities of strawy manure or by turning under green-manure crops. It is oftentimes practicable to cover the clay soil with 2 or 3 inches of sand and then thoroughly incorporate the two by plowing and disking. Sandy soils may be greatly improved for gardening purposes by growing green-manure crops on the land or by turning under liberal quantities of stable manure.

Good drainage is very important in the garden, and if the soil is not naturally well drained it should be drained artificially. Tile drains are the most satisfactory for the garden, but open ditches may be used.

GARDEN PLAN.

SIZE.

After the location for the garden has been settled upon, the next point to consider is the size of the garden that is needed. The area used will depend upon the amount of ground that

is available, upon the fertility of the soil, the intensiveness of the cultural methods to be used, the size of the family, and the preferences for different kinds of vegetables. Where a large family is to be supplied, or where it is desired to grow quantities of vegetables for neighbors and friends, about a half-acre plat should be set aside for the garden. If only small quantities of vegetables are needed and the soil is very fertile, this area can often be reduced to a quarter of an acre or less. In many instances crops like sweet corn, potatoes, melons, pumpkins, and squash are raised as field crops or as interplanted crops in the young orchard, and where such is the case, the kitchen garden may be made comparatively small. The keynote to success in the garden is to have the soil as fertile as possible, so as to limit the garden to the smallest area that will produce sufficient vegetables with the least amount of labor. A small garden well cared for is far better than a larger garden which is partly neglected.

Wherever practicable, a space equal in size and adjacent to the garden should be set aside for planting to a soil-improving crop. With such a plat available the garden can be rotated every year and the soil kept in a good state of fertility.

ARRANGEMENT.

The arrangement of the garden should be carefully worked out to suit the conditions of each particular farm. In the winter, when there is usually plenty of time available, it is a good plan to sit down with paper, pencil, and rule and draw 9
out a plan of the garden. Mark on this plan the location for each vegetable and the amount, the successions, date of planting, etc. By making a plan and following it throughout the season the greatest success will be had with the garden.

While each garden must be planned to suit the conditions, there are a few general rules which apply to all gardens. The rows should run north and south to give the best distribution of sunlight on all sides of the plants, but where it is more convenient and where washing must be prevented the rows can run in other directions. All permanent vegetables like rhu- 10
barb, asparagus, herbs, etc., should be planted at one side of the garden, where they will not be disturbed every year. Tall vegetables, like corn and pole beans, should be put at the north end of the garden or in a position where they will not shade the small vegetables. Wherever the land is available and horse cultivation can be used, allow sufficient space between rows for the larger cultivating tools. Also run the rows the long way of the garden to avoid excessive turning at the

ends of the rows. Provide a 4 or 5 foot pathway along two sides of the garden at right angles to the rows, so that turning with the cultivator can be managed without injuring the vegetables. All vegetables that are to be planted early and that are to receive early cultivation at the same time should be grouped at one side of the garden to facilitate cultivation.

FENCES AND WINDBREAKS.

Every garden should be surrounded by a fence to keep out chickens and other farm animals. In the prairie regions a windbreak or shelter belt is absolutely necessary to protect
11 the garden, and in other regions, while the windbreak is not so necessary, it may protect the crops from damage by strong winds, and the protection from cold winds may lengthen the crop-growing season considerably. If a grove of trees, a row of evergreens, or a hedge is not available as a windbreak, a tight board fence may be erected for temporary use.

SUCCESSION OF CROPS.

To make a garden yield the maximum quantity of vegetables it is necessary that the land be occupied as much of the time as possible. In some sections three or more crops may be
12 grown on the same land during the season, and care must be used in selecting the crops that are to follow the early-season crops. The same vegetable, one with the same characters, or one belonging to the same family which has been used for the first planting should not be used in the same place at the second planting. Cabbage, kale, mustard, brussels sprouts, or cauliflower should not follow each other, for the same insects and diseases affect all these plants; and for the same reason peppers, eggplant, and tomatoes should not follow each other. In many cases an early vegetable is harvested and, if no other vegetable is to be planted until fall the ground may be planted with cowpeas or other leguminous crops which can be plowed under in preparing for the fall crop.

ROTATIONS.

The rotation of crops is very important in the garden, both in conserving plant food and in checking the spread of insects and diseases. Space which has been occupied by a diseased crop should not be replanted the following year with the same or a closely related crop. It is a good plan to rotate the entire garden every year with an equal-sized plat which has been planted to clover or cowpeas. If such an extra plat is not

available, the locations of the various vegetables may be changed each succeeding year. If root crops, such as turnips, parsnips, beets, carrots, etc., are followed by foliage crops like kale, cabbage, collards, lettuce, etc., or by crops like tomatoes, beans, melons, or peppers, this will tend to conserve the plant food in the soil and prevent heavy infestations of insects and plant diseases.

SEED.

As soon as the location for the garden is selected and a plan made showing the kinds of vegetables to be grown and places for planting them the question of varieties should be decided. A number of points should be considered in selecting the varieties of vegetables to grow, among them being the time of maturity, the adaptation of the variety to the conditions, and the quality of product the plant produces. Usually it is better to select only standard varieties that do well in the locality, but a few novelties may be tried in a small way. With the exception of tomatoes and corn it is often better to select a few varieties and plant these in succession than to procure a larger number of early and late varieties.

Vegetable seed should be purchased several weeks ahead of the time it is to be used, and it is advisable to procure the seed only from reliable seedsmen. A good plan is to write to several of the leading seed firms of the country and ask for descriptive catalogues. These catalogues should be secured in the winter, so that the selection of seed may be made at leisure moments and the order sent out early.

The quantity of seed to purchase will depend upon the preferences for different vegetables and the size of the garden. For an average family one of the ordinary seedsman's packets will be enough of the smaller seeds but several packets of corn, peas, and beans will be required.

Buy only first-class seed, for inferior seed will be expensive at any price.

As soon as the seed arrives it should be tested by counting 13
out 50 or 100 seeds of each variety, putting them between two sheets of moist cloth or blotting paper and covering with two plates. By looking at the seed every day the promptness and percentage of germination can be ascertained. In a good grade of garden seed 80 to 85 per cent of the seed should germinate in five or six days. Seeds that send out strong sprouts in a few days have the vitality necessary to insure a good stand of plants, and this is an important item in garden work.

PLANTS.

To secure the best results from the garden it is very desirable to set plants in the open ground as soon as danger of frost
14 is passed. These plants can be grown in a limited way in shallow boxes or flats set in a sunny window of the dwelling house. The soil for the seed boxes should be fine and mellow, and the seed should be planted in rows with a label to designate each
15 variety or kind. As soon as the plants form three or four
16 leaves they should be pricked off into other boxes, the plants being set at least 2 inches apart each way. Where there is not sufficient space in the house for growing all the plants desired, it is possible to grow the seedlings inside and prick them off into a cold frame out of doors.

All seedlings should be transplanted at least once before they are ready to set in the garden. This transplanting causes the plant to become stocky and to produce a mass of fine roots.
17 In many cases the seedlings are transplanted from the seed flats into earthen pots or dirt bands. Plants from the pots or bands can be set in the garden without disturbing the roots,
18 and the plants receive no check in their growth. By this means it is possible to have plants ready to set in the garden at any time when another crop is taken out. For example, as fast as early cabbage is cut tomato plants can be set in their places, and pepper plants may be set in the row as fast as the early lettuce is harvested, etc.

HOTBEDS AND COLD FRAMES.

A hotbed and a cold frame of some form are very necessary to secure the maximum benefits from the garden. Plants can be raised more satisfactorily and on a much larger scale with frames than with seed boxes set in the house window. The frames can also be used for maturing early crops and for carrying over crops into the winter.

A very serviceable frame for a hotbed or cold frame may be
19 constructed similar to the one shown on the slide. Oak or cypress boards 1 inch thick may be used, but thicker material is more durable. A more permanent frame can be constructed by using concrete. A hotbed 6 by 6 feet will be sufficient for the needs of most farm gardens, and a cold frame of equal size will be found of great assistance in growing crops successfully.

MAKING A HOTBED.

Secure a quantity of fresh horse manure made up of about two parts of the solid excrement to about one part of litter. Pile in a heap under cover for a few days, so that it will heat,

and turn it over a few times to mix it thoroughly. When mixed place the manure in a pile to a depth of 18 inches, keeping it well trampled while being placed. On top of this manure place the frame and pack manure tightly all around it. Place inside the frame 4 to 5 inches of rich soil and cover with glass sash. Window sash can often be used for this purpose. The bed should stand for several days, some ventilation being given meanwhile, so that the gases from the manure may escape. When the temperature of the bed has fallen to between 80° to 90° F., the seed may be planted.

Another very satisfactory method of constructing a hotbed is to dig a pit to a depth of 18 to 24 inches and in this pack the manure and place the frame over it. This method has the advantage of requiring less manure. In using either method it is a good plan in the fall to cover the ground where the hotbed is to be located with a layer of manure about a foot thick. This covering of manure will keep the soil soft and warm, which will be a great aid when the time comes to construct the hotbed.

MANAGEMENT OF A HOTBED.

When the temperature has fallen to the required degree the soil is raked until very fine and all strawy material and refuse removed. The seed is planted in rows 3 inches apart and to a depth of an eighth to a half inch, according to the size of the seed. A thin stick or a lath can be pressed into the soil to give the required depth and to mark the rows. The seed should be covered very lightly with soil.

As the plants grow they should be watered often enough to keep the soil from drying out, but not enough to keep the soil water-soaked. Water should be applied in a fine spray, and this can be done by using a rose on the hose or watering can. The watering should be done early in the day, so that the plants will have time to dry off before night.

Plants should have plenty of fresh air, but should not receive a direct draft or air that is chilly enough to check their growth. The hotbed sash may be raised slightly in the morning after the air becomes warm, but it should be lowered again before it turns colder toward evening. The sash should be opened only on the side opposite from the direction of the wind. On a bright sunny day the sash may be raised several inches, but on a dull day only a very small opening should be given. Always give good ventilation after watering the plants. When the plants get large and the weather becomes warm the sash is left off gradually for longer periods to harden the plants.

Such plants as are being grown for setting in the field should be transplanted into the cold frame as soon as they are about 2 inches high and have three or four leaves. Plants which are to mature crops in the hotbed should be thinned out as soon as they begin to crowd in the row. The soil should be stirred several times and all weeds taken out as soon as they appear. A hand weeder is a useful tool for this purpose.

Radish, lettuce, onions, etc., can be produced very early in the spring in the hotbed. Tomato, cabbage, celery, cauliflower, eggplant, pepper, and kohl-rabi plants should be started in the hotbed in order to have them ready for planting in early spring.

A cold frame usually is only a frame placed over a good portion of garden soil. No source of heat is supplied except what comes from the sun. A cold frame is used to protect tender plants during the early spring or late autumn. The management of a cold frame is very similar to that of a hotbed, both in regard to watering and in ventilating.

ESTABLISHING THE GARDEN.

FERTILIZING.

The soil used for growing vegetables should be very rich and well supplied with humus. To produce vegetables of high quality and in a short period of time it is necessary to have large amounts of readily available plant food. Well-rotted stable manure is probably the best fertilizer, because it supplies both the plant food and humus. Wherever it is possible to obtain sufficient manure it should be applied at the rate of 20 to 50 tons per acre, depending on the character of the soil. If sufficient manure is not obtainable it can be supplemented by using commercial fertilizer. An application of 600 to 1,000 pounds of a high-grade mixture analyzing 8 to 10 per cent phosphoric acid, 2 to 4 per cent nitrogen, and 6 to 10 per cent potash will be satisfactory on many garden soils.

When coarse or strawy manure is used it should be applied and plowed under in the fall, but if the stable manure is well-rotted it may be applied as a top-dressing and plowed under in the spring. Commercial fertilizer may be applied broadcast over the land and thoroughly mixed with the soil by harrowing.

A compost heap will furnish plant food that is in a quickly available condition and also soil which can be used in the hotbed, cold frame, seed flats, and to put under and around plants which require considerable quantities of nitrogen.

Such plants as cucumbers, cantaloups, watermelons, squashes, etc., will be greatly benefited if good compost is used in the hill when the seed is planted.

A compost heap can be easily made. First select a place near the garden, but screened from view. Put down a layer of sods and over this place alternate layers of manure, sandy soil, and clay soil until the whole pile is several feet high. The whole compost pile should be cut down and turned several 22
times during the season, and by the next spring the manure will be thoroughly decayed and mixed with the soil.

PREPARING THE SOIL.

The garden soil should be thoroughly prepared. A deep seed bed (8 to 10 inches) with the soil loose and mellow to the full depth is very essential. Heavy land should be plowed in the fall if there is no danger of washing and replowed in the spring. Land that it is not advisable to plow in the fall should be plowed as early in the spring as possible. If there is plenty 23
of humus in the soil, or some green-manure crop is turned under, the soil will crumble, and a fine seed bed can be easily prepared. If the soil is heavy and is lacking in humus it is inclined to stick together and bake, and it is a difficult matter to pulverize it sufficiently for gardening work. Care must be 24
used to cover all sod and strawy material so they will quickly 25
decay and not interfere with the garden operations.

After plowing, the land should be thoroughly harrowed, and oftentimes a planker or roller can be used to good advant- 26
age in breaking up lumps and clods. Later harrowings with a slicing or a spike-toothed harrow will further pulverize the 27
soil and make it level and smooth, ready for planting.

LAYING OFF.

It is a simple matter to take the plan which has been made of the garden and lay off the distance along two opposite sides of the garden and set a stake at each place. By stretch- 28
ing a garden line between stakes it is possible to secure straight rows which add attractiveness to the garden.

SEEDING.

In a small vegetable garden the seed is usually sown by hand, but in larger areas a seed drill will do much better work and 29
in much less time than if done by hand. The seed is usually sown much thicker than is required, so as to insure a stand. Later the plants are thinned, leaving only the strongest and

best plants. All small seed is sown to a depth of a quarter to three-quarters of an inch, depending upon the soil and the season, while larger seed like corn, beans, peas, etc., are sown to a depth of 2 inches.

The time for sowing seed depends upon the season in the particular locality, but it is a good plan to have an abundance of seed on hand, so that early plantings may be made, running the chance of their being destroyed by late spring frosts. If the frosts do destroy a planting, nothing is lost but the seed, while much valuable time may be gained if the first plantings are not destroyed.

SETTING.

The soil where plants are to be set should be worked up fine to a depth of several inches to facilitate planting. The plants should be thoroughly watered an hour or so before removing them from the flats or frames, to insure the adherence of the earth to the roots. If the plants have not been transplanted
30 into pots or dirt bands they should be removed with a ball of earth attached to the roots.

A cloudy day or just before nightfall is the best time to set out plants, though potted plants and plants in dirt bands may be set at any time with good results. The plants should be set a trifle deeper than they were in the seed bed and the soil firmed around the plant from the bottom of the hole to the surface. A trowel or a dibbler can be used for making the holes to receive the plants. If water is to be used in setting the plants it should be poured about the plant when the hole is partially filled with soil. The moist earth is then covered with dry soil, which prevents the rapid evaporation of the moisture.

Cabbage and lettuce plants may be set in the open as soon as the ground can be worked in the spring, but many plants such as tomato, pepper, eggplant, etc., should not be set out until the weather has become warm. Some time may be gained by setting the tender plants before danger of frost is over and then protecting them by covering with newspapers, tin cans, berry
31 boxes, or plant covers. These covers may be put over the plants at night when frosts are likely to occur, and if partially removed in the morning they will shade the newly set plants.

MANAGEMENT.

CULTIVATION.

Thorough preparation of the seed bed and good seed properly planted are very essential for successful gardens; but unless the plants are properly cultivated during the season the garden will prove a failure. Cultivation is not entirely for the

purpose of killing the weeds, but has as its main object the conserving of soil moisture. Frequent shallow cultivation forms a soil mulch which prevents the loss of moisture, and the frequent stirring prevents the growth of weeds. The soil close around the plants should be kept fine and free from weeds the same as the spaces between the rows. If the cultivation is begun as soon as the plants show and is kept up at regular intervals throughout the season the work does not become burdensome. If cultivation is given only occasionally the plants may suffer, and the work is arduous and unsatisfactory. Cultivate the land after every heavy rain, so as to break up the crust that has formed, and give other cultivation as needed to form a soil mulch.

If the garden has been laid out with long rows and a wide space between rows, the bulk of the cultivating may be done with a fine-toothed horse cultivator. There are, however, a number of hand cultivators with which the cultivating can be very quickly and efficiently done. In many instances very efficient work may be done with the hoe, but the larger share of the work of cultivating can be performed much quicker with a hand cultivator.

IRRIGATION.

A good supply of water in the soil is necessary throughout the growing season, to enable the plants to grow vigorously. Many times during long periods of hot, dry weather the supply of moisture in the soil becomes very low, and the plants are so checked in growth that they fail to produce any crop, or at best produce a very poor crop. Wherever a supply of water is available it is often possible to establish an irrigation system which will insure an abundance of water for the plants at a relatively small expense.

Several systems of irrigation are adapted to the garden. An overhead system is probably best. By one such system the water is applied by means of elevated pipes placed at regular intervals over the garden. Nozzles are set in these pipes every 2 feet, and the pressure on the water forces out a fine stream or mist. Water may also be applied to the garden crops by means of a hose, by running the water in furrows between the rows or by running the water in tile placed under the soil. The chief factor that must be considered in any system of irrigation is a sufficient supply of water.

CONTROL OF INSECTS AND DISEASES.

There are a number of pests that injure garden crops, and all persons who attempt gardening should provide themselves with a hand sprayer of some kind and a supply of arsenate of

lead, a nicotine solution, copper sulphate, and rock lime. It is much easier to control the pests when they first appear than it is to check their damage after the plants are thoroughly infested.

The insects which trouble the garden crops may be grouped in two main classes, chewing insects and sucking insects. For the control of the first class arsenate of lead is generally used, applied as a fine spray which covers every part of the plant. The insects in eating any of the plant obtain sufficient poison to kill them. Some insects of this class are the potato "bug," cabbage worms, tomato worms, etc. The sucking insects can not be killed by poison, because they do not eat on the surface. They obtain food by sucking the sap from the plant and can be controlled only by applying a preparation which will kill by coming in contact with their bodies. Some form of nicotine solution or pyrethrum powder is generally used for the purpose. Plant lice belong to this class.

The diseases which trouble the vegetable crops can also be grouped into two classes, fungus diseases and bacterial diseases. The fungus diseases may be controlled by spraying with Bordeaux mixture. The bacterial diseases, so far as known, can not be controlled by spraying. Plants affected with tomato wilt, cantaloup wilt, etc., should be pulled and burned as soon as the disease is noticed, and these crops should not be planted on the same ground until several years later.

For specific information regarding the control of insects and diseases one should write to the State agricultural colleges or the United States Department of Agriculture, Washington, D. C.

SPECIAL PRACTICES.

A great many crops are grown in the garden and a number of them should be handled in a certain way to give the best
42 results. Cauliflower just as it is beginning to head should have the upper three or four leaves folded over the head and tied. This treatment bleaches the heads and makes them more tender. Tomatoes if trained up to stakes or on wires will give much better results than if the tomatoes lie on the ground. Celery plants, when they get about a foot high, should have the stalks covered for a period of about 10 days.
43 Paper, boards, tile, dirt, etc., may be used for covering the celery, for only by this bleaching is it possible to secure the brittle, high-flavored stalks that are so much desired. Late
44 in the autumn, before freezing weather begins, celery may be placed in trenches dug in the ground, and a supply of celery may thus be secured until late into the winter.

GATHERING VEGETABLES.

One of the greatest sources of pleasure in having a home garden is to obtain the vegetables in just the right state of maturity; therefore, the crops must be watched closely and gathered at the right time. It is much better to gather snap beans every day and secure them when they are small and tender than to allow them to go unpicked for several days until they get large and stringy. Cauliflower should be cut before the head begins to open and cabbage before the head cracks open.

SURPLUS VEGETABLES.

Whenever a larger supply of vegetables is secured than is needed for immediate use they may be canned for use during the winter. Beans, peas, corn, tomatoes, and a great number of other vegetables can be canned very easily, and they will aid in supplying the need for vegetables in the diet during the winter. A number of the root crops, such as beets, turnips, carrots, rutabagas, potatoes, etc., may be stored in the house cellar or an outdoor cellar for use during the winter. Pumpkins, squash, and sweet potatoes will keep much better when stored in the attic than if stored in a cellar.

CONCLUSION.

On every farm there should be a vegetable garden, for it is possible to make it one of the best paying pieces of land on the farm, and it will also be one of the attractions and pleasure-giving portions of the home grounds.

APPENDIX.

LANTERN SLIDES.

1. A good farmer's garden.
2. A collection of vegetables gathered at one time from a farmer's garden.
3. An early beginning in teaching the children the names of plants and how they grow.
4. A southern slope which will make an ideal location for the garden.
5. Heavy clay soil which needs the incorporation of humus and sand to make it suitable for gardening.
6. Sandy soil like this needs plenty of manure or green manure crops turned under to enable it to produce good vegetable crops.
7. A crop of cowpeas like this turned under will aid greatly in improving the soil for the garden.
8. A good application of manure for improving the garden soil.
   The manure should be spread as soon as possible after hauling it onto the land.
9. A suggestive plan for a vegetable garden.
10. Pole beans and cucumbers.
    Locate the pole beans where they do not shade low growing crops.
11. A privet hedge used as a windbreak for the garden.
12. Land prepared for a late crop of Irish potatoes after early vegetables had been taken off.
13. A simple method for testing garden seeds.
14. A seed flat that is useful for growing early plants indoors or under glass.
15. Seedling plants ready for transplanting.
16. Plants just after transplanting and a few days later.
    Notice the space between plants and the stocky appearance of the plants.
17. Transplanted and nontransplanted celery plants compared.
    Note the advantage secured by transplanting.
18. A pot-grown tomato plant.
    Notice the heavy growth of roots and the ball of earth which allows of the plant being set out at any time without checking its growth.
19. A comparatively cheap and satisfactory frame which may be used for a hotbed or a cold frame.
20. Preparing the manure for a hotbed.
21. A small serviceable hotbed.
22. A newly prepared compost heap.
23. A cover crop being plowed under.
    Notice how the soil breaks apart. This was heavy clay land.
24. Good and poor preparation of clay land.
25. Poorly prepared garden soil.
    Notice the straw rubbish left on the surface where it will interfere with the later work in the garden.
26. The disk harrow is a useful tool in preparing the soil for the garden.
27. A harrow that is useful in fining the garden soil.
28. Laying off the rows in the garden.
29. Sowing seed with a drill and marking the next row at one operation.
30. Celery plants removed from the flat without disturbing the earth about the roots.

31. Plant hoods used for protecting early plants from frosts.

32. Snap beans showing the need for cultivation, although few weeds are present.

33. Good cultivation between rows of lettuce.

34. Good cultivation immediately around a plant of kohl-rabi.

35. Breaking the crust formed after a rain.

This hand cultivator is fitted with small disks.

36. The wide rows made it possible to do all the cultivating about these beans with horse labor.

37. A good type of horse cultivator to use in the garden.

38. Two types of hand cultivators that are used in garden work.

39. Hoeing the vegetables in the home garden.

40. Two methods of supplying water to the garden crops.

41. A compressed-air sprayer is a useful type for garden use.

42. Tomatoes trained upon strings.

43. Celery that has been bleached by the use of boards.

44. Trenching celery for winter use.

45. Fresh cantaloup at just the right stage of ripeness is possible in the home garden.

46. Cauliflower in prime condition for cutting.

47. A winter supply of vegetables like this is possible from the surplus of the garden.

48. An outdoor cellar in which vegetables may be stored for winter use.

49. A collection of vegetables picked when frost killed the vines.

Pumpkins, squash, and sweet potatoes should be stored in the attic where it is warm and dry.

50. Figuring up the profits from the home garden.

The boy does not show that he has suffered from the work he has done in the garden.

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11. The Vegetable Garden. Indiana Expt. Sta. Bul. 171.
12. Vegetable Growing in Alabama. Alabama Expt. Sta. Circ. 14.
13. Vegetable Growing in Colorado. Colorado Expt. Sta. Bul. 199.
14. Vegetable Culture in North Louisiana. Louisiana Expt. Sta. Bul. 141.
15. Truck Farming. Texas Expt. Sta. Circ. 3.
16. Fruit and Vegetable Diseases and Their Control. Minnesota Expt. Sta. Bul. 153.
17. Preparation of Vegetables for the Table. U. S. Dept. Agr. Farmers' Bul. 256.
18. The Farmers' Vegetable Garden. North Dakota Expt. Sta. Circ. 5.